

Claims

What is claimed is:

1. A particulate trap, comprising:
a housing;
a plurality of filters disposed within the housing;
a plurality of dividers fluidly isolating one or more of the plurality of filters into filter divisions;
at least one inlet and at least one outlet individually associated with each filter division; and
a valve assembly configured to selectively block a flow of exhaust through each of the inlets.
2. The particulate trap of claim 1, wherein the at least one inlet includes at least one inlet tube, and the at least one outlet includes at least one outlet tube
3. The particulate trap of claim 1, wherein the at least one inlet includes a plurality of inlet tubes and the at least one outlet includes a plurality of outlet tubes.
4. The particulate trap of claim 1, wherein each of the plurality of filters includes a plurality of filter sections, each filter section being regenerable.
5. The particulate trap of claim 4, wherein each of the plurality of filter sections includes an electrically conductive wire mesh medium.
6. The particulate trap of claim 4, wherein each of the plurality of filter sections has a substantially corrugated shape.

7. The particulate trap of claim 1, wherein the valve assembly includes a plurality of valve elements, each of the plurality of valve elements being configured to selectively block one of the at least one inlets.

8. The particulate trap of claim 1, further including a controller operable to selectively cause regeneration of at least one of the plurality of filter sections when a predetermined condition has been satisfied.

9. The particulate trap of claim 8, wherein the predetermined condition is a lapsed period of engine operation.

10. The particulate trap of claim 8, wherein the predetermined condition is a pressure differential measured across the filter divisions.

11. The particulate trap of claim 1, wherein each of the plurality of filters is substantially rectangular and a flow of exhaust enters a first side of the plurality of filters and exits a second side of the plurality of filters.

12. The particulate trap of claim 1, wherein all of the inlets receive exhaust from a common inlet chamber and all outlets flow exhaust to a common outlet chamber.

13. The particulate trap of claim 1, wherein an exhaust flow through each of the plurality of filters flows in one direction.

14. The particulate trap of claim 1, wherein each of the plurality of filters is independently replaceable.

15. A method of removing particulates from an exhaust flow, the method comprising:

flowing exhaust through a plurality of inlets, each inlet directing a portion of the exhaust flow to an associated filter division, each filter division

being fluidly isolated from at least one other filter division and having at least one filter;

filtering particulates out of the exhaust flow with the at least one filter;

selectively blocking the exhaust flow through at least one filter division; and

selectively applying electrical current to at least one filter section of the at least one filter to regenerate the at least one filter.

16. The method of claim 15, wherein the blocking of the exhaust flow and the selectively applying of current are performed when a predetermined condition has been satisfied.

17. An engine system, comprising:

an engine operable to produce an exhaust air flow;

a particulate trap operatively connected to the engine and configured to receive the exhaust air flow, the particulate trap including:

a housing;

a plurality of filters disposed within the housing;

a plurality of dividers fluidly isolating one or more of the plurality of filters into filter divisions;

at least one inlet and at least one outlet individually associated with each filter division; and

a valve assembly configured to selectively block a flow of exhaust through each of the inlets.

18. The engine system of claim 17, wherein each of the plurality of filters includes a plurality of filter sections, each filter section being regenerable.

19. The engine system of claim 17, wherein the air distributor includes a plurality of valve elements, each of the plurality of valve elements being configured to selectively block one of the at least one inlets.

20. The engine system of claim 17, further including a controller operable to selectively cause regeneration of at least one of the plurality of filter sections when a predetermined condition has been satisfied.

21. The engine system of claim 17, wherein each of the plurality of filters is independently replaceable.

22. A particulate trap, comprising:
a housing;
a means for filtering;
a plurality of dividers fluidly isolating the means for filtering into divisions;
at least one inlet and at least one outlet individually associated with each division; and
a valve assembly configured to selectively block a flow of exhaust through each of the inlets.

23. The particulate trap of claim 22, further including a means for controlling in communication with the means for filtering and the valve assembly, the control means operable to selectively cause regeneration of the filtering means when a predetermined condition has been satisfied.